Pulmonary Micro-Embolism of Foreign Material Causing Acute Right Ventricular Failure and Cardiac Arrest

Pratik Mondal
Srikanth Yandrapalli
Dennis Roarke
Madhura Hanmantgad
Zeeshan Solangi
New York Medical College, zeeshan_solangi@nymc.edu

See next page for additional authors

Follow this and additional works at: https://touroscholar.touro.edu/nymc_fac_posters

Part of the Cardiology Commons

Recommended Citation

This Poster is brought to you for free and open access by the Faculty at Touro Scholar. It has been accepted for inclusion in NYMC Faculty Posters by an authorized administrator of Touro Scholar. For more information, please contact touro.scholar@touro.edu.
Authors
Pratik Mondal, Srikanth Yandrapalli, Dennis Roarke, Madhura Hanmantgad, Zeeshan Solangi, William H. Frishman, and Sachin Sule

This poster is available at Touro Scholar: https://touroscholar.touro.edu/nymc_fac_posters/14
Pulmonary granulomatosis from foreign body micro-embolism has been described in literature since the 1950s under different terminologies like talc granulomatosis, excipient lung disease, pulmonary foreign body angiogranulomatosis, etc. It is seen when crushed oral tablets are used intravenously. Tablets contain excipients like talc, cellulose, etc., which are insoluble inert particulate filler. Administered intravenously, these particles lodge in the pulmonary arterioles and capillaries triggering a foreign body response which may vary from a granulomatous reaction resulting in slowly progressive fibrosis and pulmonary hypertension to an acutely fatal reaction leading to small vessel thrombosis and occlusion leading to acute right sided heart failure and cardiac arrest.

A 32-year old incarcerated man with a history of intravenous drug abuse presented to the ER with fever and knee pain. He recently had surgical debridement of a left tibial abscess due to an infected prosthetic knee replacement, drug abuse presented to the ER with fever and knee pain. He recently had surgical debridement of a left tibial abscess due to an infected prosthetic knee replacement.

Hospital Course

On day 2, he developed chest tightness, shortness of breath (SOB), and was found to be hypoxemic. ECG showed sinus tachycardia and diffuse up-sloping ST segment elevations. Arterial pO2 was 50mm Hg. He continued to have fevers despite broad spectrum antibiotics. On day 7, chest tightness and SOB acutely worsened. ECG showed sinus tachycardia and diffuse up-sloping ST segment elevations. Arterial pO2 was 50mm Hg. Echocardiogram showed severe right ventricular dilatation and dysfunction.

He was emergently transferred to the ICU after which he turned cyanotic and unresponsive with pulseless electrical activity. Despite aggressive resuscitative efforts, return of spontaneous circulation was not achieved. Tissue plasminogen activator was administered during resuscitation. There needs to be more research to assess diagnostic and treatment modalities.

Case Description

Left lower leg: between outer elastic wrap and inner white wrap is an empty normal saline syringe. No evidence of infection. Heart: No significant atherosclerosis, left anterior descending artery tunnels into the myocardium 0.1cm to 0.2cm. Lung: Parenchyma markedly congested with edema, with patent arteries at the hilum. Within the pulmonary arteriole there was presence of polarizable foreign material with cellular response.

Microbiology and Toxicology: Autopsy blood cultures growing peptinophilus asaccharolyticus, other cultures negative. Blood positive for oxycodone, acetaminophen, fluoxetine, mirtazapine and gabapentin, urine positive for oxycodone. Gastric contents negative for opioids.

Cause of Death: Pulmonary micro-embolism of foreign material. It was retrospectively concluded that he had been injecting crushed medications through his central line.

Autopsy Findings

Fig 1. EKG showing sinus tachycardia with diffuse up-sloping ST segment elevations. Arterial pO2 was 50mm Hg. Echocardiogram showed severe right ventricular dilatation and dysfunction.

Fig 2. Autopsy – gross knee findings

Fig 3. Artery within the lung demonstrating foreign material

Fig 4. Polarizable Foreign Material

Discussion

With the current epidemic of intravenous drug abuse, we believe that pulmonary granulomatosis from foreign body micro-embolism is appreciably prevalent. A high level of suspicion is needed to diagnose this potentially fatal disease. Diagnosis is attained by a lung biopsy. Systemic and inhaled steroids have shown to decrease symptom severity. The only way to prevent the progression of disease is to stop intravenous drug use, with lung transplantation being the only definitive treatment. There needs to be more research to assess diagnostic and treatment modalities.

Whether ventilation/perfusion imaging would be a more sensitive study to demonstrate the perfusion defect in the pulmonary arterioles, and whether this disease can be considered a subset of chronic thromboembolic pulmonary hypertension and symptomatically be treated with pulmonary arterial vasodilators is still to be assessed.

References:

7. Pratik Mondal, MD; Srikanth Yandrapalli, MD; Dennis Roarke, MD; Madhura Hanmantgad, MD; Zeeshan Solangi, MD; William Frishman, MD; Sachin Sule, MD. "Pulmonary Micro-Embolism of Foreign Material Causing Acute Right Ventricular Failure and Cardiac Arrest." Department Of Medicine, New York Medical College, Westchester Medical Center, Valhalla, NY.